

Mobility21

DoT National University Transportation Center [2017-2022]



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Carnegie Mellon University

A Driver's License Test for Driverless Vehicles

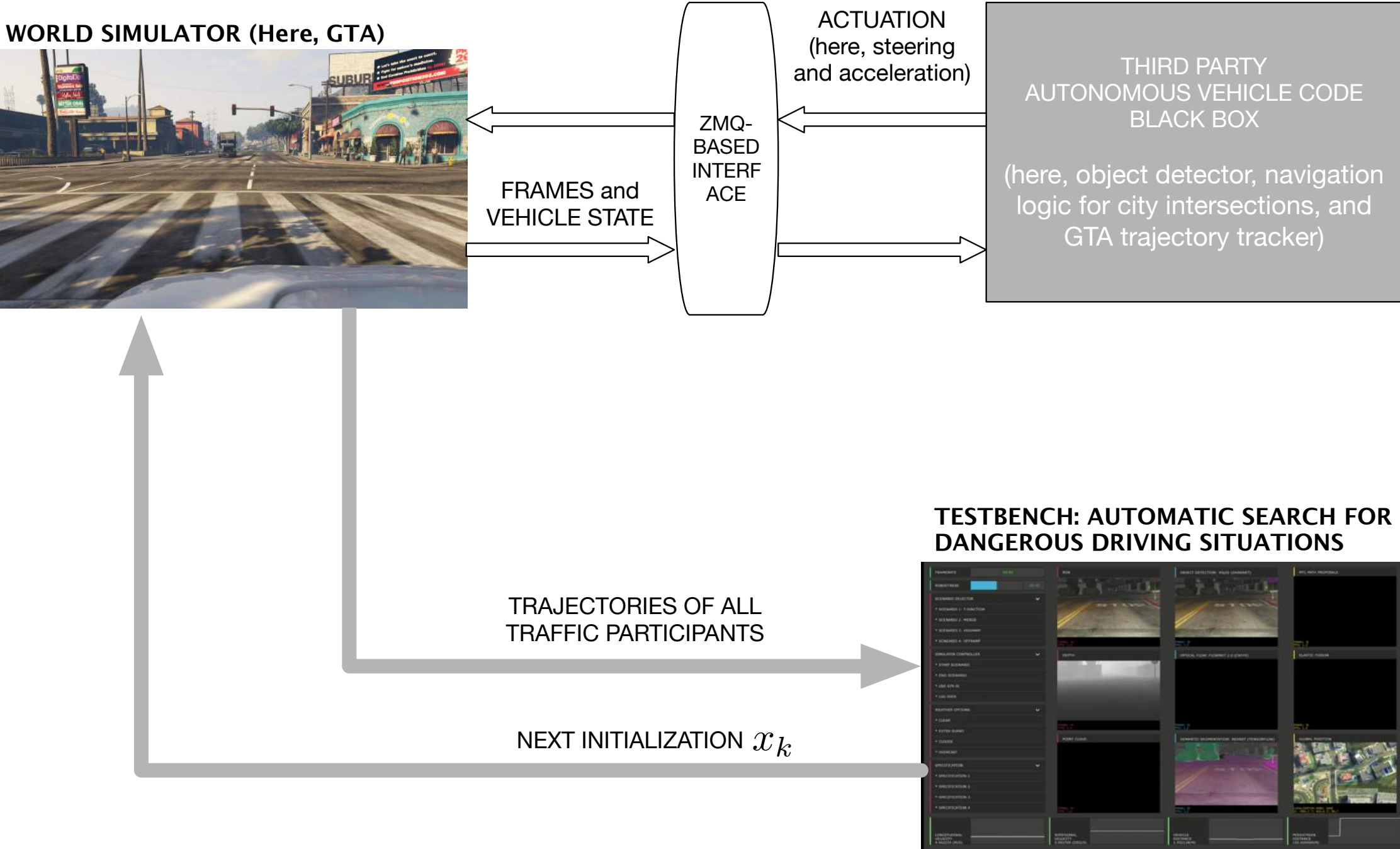


Safe AV: Key Challenges

1. Defining Safe Autonomous Systems
2. The Insurance Problem
3. The Guardian Angel Problem
4. Connected Autonomous Vehicles

AVCAD Toolchain – We build AV Testing Tools to evaluate the safety in Synthetic Worlds

TEST HARNESS: SIMULATOR, AV CODE and TESTBENCH
(Section II)



AVCAD: Robust Testing Interface

FRAMERATE

59.96

ROBUSTNESS

50.00

SCENARIO SELECTOR

▼

* SCENARIO 1: T-JUNCTION

* SCENARIO 2: MERGE

* SCENARIO 3: HIGHWAY

* SCENARIO 4: OFFRAMP

SIMULATOR CONTROLLER

▼

* START SCENARIO

* END SCENARIO

* USE GTA AI

* LOG DATA

WEATHER OPTIONS

▼

* CLEAR

* EXTRA SUNNY

* CLOUDS

* OVERCAST

SPECIFICATION

▼

* SPECIFICATION 1

* SPECIFICATION 2

* SPECIFICATION 3

* SPECIFICATION 4

LONGITUDINAL VELOCITY

2.097508 (M/S)

ROTATIONAL VELOCITY

0.001125 (DEG/S)

VEHICLE DISTANCE

1.236216(M)

PEDESTRIAN DISTANCE

150.000000(M)

RGB

FRAME: 17
FPS: 1.3

DEPTH

FRAME: 17
FPS: 1.3

POINT CLOUD

FRAME: 17
FPS: 1.3

OBJECT DETECTION: YOLO2 (DARKNET)

FRAME: 17
FPS: 1.3

OPTICAL FLOW: FLOWNET 2.0 (CAFFE)

FRAME: 17
FPS: 1.3

SEMANTIC SEGMENTATION: RESNET (TENSORFLOW)

FRAME: 17
FPS: 1.3

MTL PATH PROPOSALS

FRAME: 17
FPS: 1.3

ELASTIC FUSION

FRAME: 17
FPS: 1.3

GLOBAL POSITION

LOCALIZATION MODE: GME
X: -854.3 Y: 416.3 Z: 86.7